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## Laparoscopic cholecystectomy in children: One centre experience



*Laparoskopowa cholecystektomia u dzieci:  
doświadczenia jednośrodkowe*

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## ABSTRACT

The incidence of cholelithiasis in children is assessed to range from 0.13 to 1.9%. Symptomatic cholelithiasis in children requiring surgery has increased in tendency over the past ten years. Food habits, obesity and family history are the most common risk factors. Aim of the study was evaluation of the indications, methods and results of cholelithiasis treatment in children. From June 2011 to December 2014, 74 consecutive patients aged 3–18 years were treated due to symptomatic cholelithiasis. In 72 patients, laparoscopic cholecystectomy (LC) was performed; in the analyzed group there were 56 girls and 18 boys. A total of 48 patients underwent an elective operation. Urgent hospitalization was required by 26 patients due to acute biliary colic in 16, cholecystitis in five, hydrops of the gallbladder in two, jaundice in two and acute pancreatitis in one patient. LC was performed after resolution of symptoms. In all cases except four, LC was performed with the three-port technique. In four cases of spherocytosis, splenectomies were completed during the same procedure and requiring insertion of an additional fourth port.

There were no intraoperative complications demanding reoperation. Minor complications included postoperative vomiting requiring antiemetic medications in 28 patients, pain located in the shoulder region in nine patients and elevation of temperature in the postoperative period in eight. Laparoscopic surgery is a safe procedure in children for removal of the gallbladder. Age of the patient is not a contraindication to the operation, and LC may be performed even in young children with symptomatic gallbladder disease.

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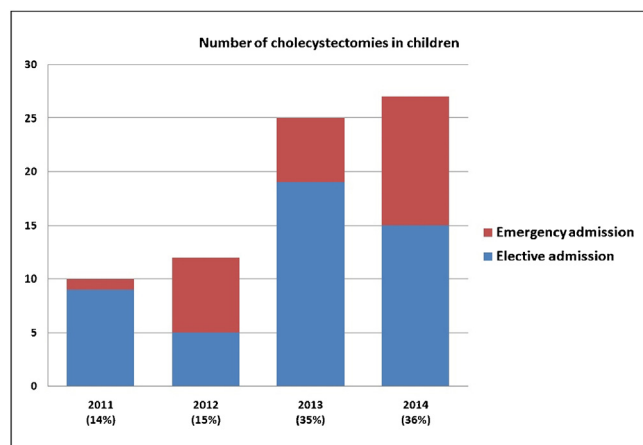
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**Introduction**

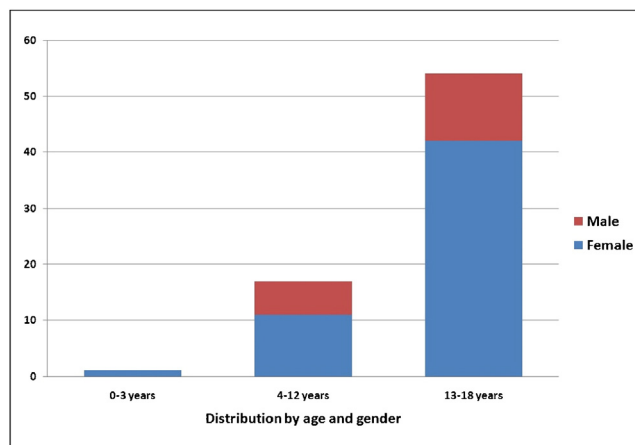
Symptomatic cholelithiasis requiring surgery in children has increased in tendency over the last 10 years. The frequency of cholelithiasis in children is assessed to range from 0.13 to 1.9% and when compared with the adult population, where risk of cholelithiasis is assessed as 10–15%, the experience of pediatric surgical centres is very scarce [1]. In 1991, three independent articles in the *Journal of Pediatric Surgery* reported that laparoscopic cholecystectomy is a safe and effective operation in children [2–4]. LC in children was performed extremely rarely before the era of minimally invasive procedures. We present our experience of LC performed in children where we have used the three port technique.

**Patients and methods**

From June 2011 to December 2014, 74 consecutive patients were treated due to symptomatic cholelithiasis in our centre (Fig. 1). The group consisted of 56 girls and 18 boys. The age of the patients ranged from 3 to 18 years (average 14 years) (Fig. 2) and body weight ranged from 14 to 104 kg (average 59 kg). Idiopathic cholelithiasis was presented in 70 patients and in four patients cholelithiasis was connected with spherocytosis. The indication for surgery in all patients was symptomatic gallstone disease. Elective operation was performed in 48 patients. Urgent hospitalization was required by 26 patients who were admitted to clinic due to: acute biliary colic in 16, cholecistitis in five, hydrops of the gallbladder in two, jaundice in two and acute pancreatitis in one patient (Tab. 1). Biliary colic and cholecistitis were differentiated by ultrasound examination. The thickening of the gallbladder wall pericholecystic fluid and elevation of inflammatory parameters indicated cholecistitis. Acute pain symptoms without ultrasound changes and without elevation of inflammatory parameters indicated acute biliary colic. In two patients, ultrasound revealed a large gallbladder and hygroma of the gallbladder was recognized. In two



**Fig. 1 – Number of cholecystectomies in children 2011-2014**



**Fig. 2 – Distribution by age and gender**

**Table I – Indication for laparoscopic cholecystectomies**

Cholelithiasis-elective	48
Biliary colic	16
Cholecystitis	5
Hydrops of the gallbladder	2
Choledocholithiasis	2
Biliary pancreatitis	1
Total	74

patients, where bilirubin levels were elevated more than 3 mg%, ultrasound revealed widening of the common biliary tract and the presence of gallstones in the biliary tract. Magnetic resonance cholangiopancreatography (MRCP) confirmed the diagnosis and patients were transmitted to the adult surgery centre where endoscopic retrograde cholangiopancreatography (ERCP) was performed before surgery. One patient, who presented with pain and elevated bilirubin and amylase levels, was categorized as having gallstone pancreatitis. All symptomatic patients had surgery performed during the same admission after resolution of symptoms. Risk factors for the development of cholelithiasis included overweight or obesity 73% (n = 54), family history 24% (n = 18), female sex 74% (n = 54).

Under general anesthesia, the patient was placed in the supine position, and pneumoperitoneum was created by closed Veress technique through the umbilicus. A 30-degree 5 mm camera was inserted through the umbilical port and two working ports were inserted on both sides of the upper abdomen. When concomitant splenectomy was planned the left working port was inserted in the lower position, and usually an 11 mm port, which allowed insertion of a 10 mm Liga-Sure device and 11 mm bag for removing the spleen and gallbladder. In four cases, where splenectomy was performed, a fourth port was introduced. The cystic duct and cystic artery were closed using titanium clips. The gallbladder was always removed through the umbilical orifice. In children who underwent laparoscopic splenectomy, the spleen and gallbladder were inserted into the plastic bag, finger-fragmented and removed through the widened left port site.

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